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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/821,857

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Norihisa Naganuma

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EXAMINER

CHANG, AUDREY Y

ART UNIT

PAPER NUMBER

2872

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
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3 MONTHS

12/21/2006

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

**Office Action Summary**

Application No.

10/821,857

Applicant(s)

NAGANUMA ET AL.

Examiner

Audrey Y. Chang

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 13 October 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

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### DETAILED ACTION

#### *Remark*

- This Office Action is in response to applicant's amendment filed on October 13, 2006, which has been entered into the file.
- By this amendment, the applicant has amended claims 1, and 10-13.
- Claims 1-20 remain pending in this application.

#### *Response to Amendment*

1. The amendments filed on **March 31, 2006 and October 13, 2006** are objected to under 35 U.S.C. 132(a) because it introduces new matter into the disclosure. 35 U.S.C. 132(a) states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows: **claims 1, and 11-13 have been amended to include the feature of "wherein the collimated beam is not a spectral beam ", (as in the amendment filed on March 31, 2006) and have been further amended to include the phrase "of which wavelength components are spatially separated"**. The specification simply **fails** to teach such.

Applicant is required to cancel the new matter in the reply to this Office Action.

#### *Claim Rejections - 35 USC § 112*

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. **Claims 1-20 rejected under 35 U.S.C. 112, first paragraph**, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the

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specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The reasons for rejection based on the newly added matters are set forth in the paragraph above.

#### ***Claim Objections***

**4. Claims 1-20 are objected to because of the following informalities:**

(1). **Claims 1, and 11-13 have been amended to include** the phrase “the collimated beam is not a spectral beam” that is confusing and indefinite since it is not clear what is considered to be a “spectral beam” here.

**Appropriate correction is required.**

#### ***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**6. Claims 1-5, 7-9 and 11-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over the patent issued to Fukushima (PN. 5,805,759).**

**Fukushima** teaches an *optical device* that is comprised of an *optical filter* (6, Figures 4, and 7(C)) that is placed in the beam path of a *collimated light beam* (SP). Fukushima teaches that the optical filter comprises a first and a second portions (6D) that in between the two portions there is a *slit* (42) such that the center wavelength of the collimated light beam that passes through the filter is selected and the transmittance of the collimated light beam verses the wavelength characteristics changes as a function of

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the wavelength, (please see Figure 7(D)). Fukushima further teaches that the filter may be moved by a *driver* (32) in a direction that is *perpendicular* to the direction of the collimated light beam, (please see Figures 6-7, column 6, lines 54-55) such that different center of wavelength of the pass-band of the collimated light can be selected as the filter is moved in the direction perpendicular to the collimated light beam, (please see column 9, lines 29-44).

This reference has met all the limitations of the claims with the exception that it does not identify explicitly that the slit is a diffraction unit. However it is known in the art that a single slit having slit width that is *much greater* than the wavelength of the incident light beam will form *single slit diffraction unit* and a maximum diffraction peak or transmittance peak for the selected and diffracted light having the selected wavelength will be formed by this single slit diffraction. Since the Fukushima reference teaches that the wavelength interest is in the range of 1.5 microns, and the slits are of the macroscopic size this means it is implicitly true that the slit (42) does form a single slit diffraction unit and the transmittance of the light beam as shown in Figure 7(D) is a maximum diffraction peak. It is also obvious to one skilled in the art, if the slit is not of the size, to make the slit to have the size capable of making single slit diffraction unit for the benefit of making the transmittance filter via the slit of Fukushima utilizing diffraction theory to maximize the transmittance peak for the pass-band of the collimated light beam.

**Claims 1, and 11-3 have been amended** to include the phrase “the collimated light is not a spectral beam *of which wavelength components are spatially separated*”. However the specification **fails** to teach such and **fails** to define what does it mean by a spectral beam, and they have been rejected under 35 USC 112, first paragraph above. This feature therefore really cannot be examined. The feature concerning the *nature* of the collimated beam is considered to be the *intended use* since the collimated beam is NOT part of the filter and it has been held that recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations. Ex Parte Masham, 2 USPQ2d 1647 (1987).

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With regard to claim 2, Fukushima teaches that the first and second filter portions are formed by plates (6D), although this reference does not teach explicitly that the portions are made by film, however since the same function, namely making these portions filter portions, is the same to make them by film or plates would have been obvious variations to one skilled in the art for the benefit of making the filter fits the specific design requirement.

With regard to claims 3-5 and 15-16, Fukushima teaches that a plurality of the optical filters (6, Figure 9) may be used wherein each of the optical filters is individually driven by the driver to move in the direction perpendicular to the direction of the collimated light beam. Fukushima teaches that each of the plurality of optical attenuation filters has specific slit patterns (please see Figures 5-7) and they are driven to provide specific transmittance characteristics, (please see Figures 10). The slits for different filters are implicitly arranged at certain angle with respect to each other since even if they are parallel to each other they are at angle zero with respect to each other.

With regard to claim 7, this reference does not teach explicitly that the driver is the types of driver claimed however these claimed drivers are all well known standard drivers in the art to use one of them would have been obvious modification to one skilled in the art for the benefit of effectively moving the optical filter as desired.

With regard to claim 8, it is implicitly true the different arrangements of the edges and slits for the attenuation optical filters result different wavelength characteristics.

With regard to claim 9, Fukushima teaches that the filter portion essentially has zero transmittance but it does not teach explicitly if they are reflection or not. However such modification does not change the function of the slit, which essentially provides transmitted diffraction beam. Furthermore, it is implicitly true that zero transmission can include non-zero reflection of the incident light and the reflection of the collimated light will be in the direction parallel to the collimation direction, by the principle of reflection.

With regard to claim 14, Fukushima teaches that the light attenuation filter region lines (ETL) with certain pitch as relative to the beam spot size (SP) is set to be less than one quarter of the beam spot size, (please see Figures 5-6). It would then have been obvious to make the grating structure of the attenuation optical filter with edges to have the pitch to be less than a quarter of the beam size for the benefit of enabling the attenuation filter to provide desired wavelength transmittance pattern.

With regard to newly added claims 17-20, Fukushima et al in different embodiment teaches that the first and second filter portion can have equal non-zero transmission with the diffraction portion defined by the edges of the first and second filter portions, (please see Figures 7(A) and 7(B)).

**7. Claims 1-5, 6, 10, 11-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over the US patent application publication by Luo et al (US 2004/0005115 A1).**

Luo et al teaches a add/drop multiplexer having an etalon filter structure that is comprises a filter having a first filter portion and a second filter portions (380, and 390, Figure 3) with a slit serves as the diffraction unit that is defined by the *edges* of the first and second filter portions and a third and fourth filter portions (340 and 350) with a slit serves as the second diffraction unit formed by the edges of the third and fourth filter portions. The filter provided a transmittance verses wavelength that is changed with respect to the wavelength since the filter portions are designed to *transmit and reflect light* of different wavelength.

This reference does not teach explicitly that the filter is arranged in the optical path of a collimated light but this is really is intended use that does not affect the structure of the filter.

Furthermore, Luo et al discloses the Fabry-Perot filter is utilized in an add/drop multiplexer device, wherein collimated light is most often used to allow the best quality of the multiplexer device.

This reference has met all the limitations of the claims with the exception that it does not teach explicitly that it include a moving unit for moving the diffraction unit to change the transmittance verses

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wavelength characteristics. This reference does not teach such explicitly however it is implicitly true that certain moving unit is there to align the filters with the incident light to allow the best operation of the add/drop multiplexer also by moving the filter therefore the diffraction unit, different portions of the filter portions will be intercepted by the incident light which therefore changes the transmittance characteristics. It would therefore have been obvious to one skilled in the art to modify the filter of Luo et al to add moving unit to properly align the incident light beam with the filter portions.

**Claims 1, and 11-3 have been amended** to include the phrase “the collimated light is not a spectral beam *of which wavelength components are spatially separated*”. However the specification **fails** to teach such and **fails** to define what does it mean by a spectral beam, and they have been rejected under 35 USC 112, first paragraph above. This feature therefore really cannot be examined. The feature concerning the *nature* of the collimated beam is considered to be the *intended use* since the collimated beam is NOT part of the filter and it has been held that recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations. Ex Parte Masham, 2 USPQ2d 1647 (1987).

With regard to claims 3-4, Luo et al teaches there are a plurality of filter portions, (please see Figure 3) and the slits of the adjoining filter making a predetermined angle.

With regard to **amended** claim 10, Luo et al teaches that the filter portions are formed on an optical block (310) that is made of optical quality glass, (please see paragraph [0020]).

### ***Response to Arguments***

8. Applicant's arguments filed on March 30, 2006 have been fully considered but they are not persuasive.

9. Applicant's arguments with regard to the **new matters rejections** concerning if the light beam is not a spectral beam are not persuasive to overcome the rejection since applicant's arguments are based on



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the disclosure of *cited Fukushima reference* instead of pointing out the support from the specification of the *instant application*, (please see page 6 of the Remark). The applicant is respectfully reminded the **disclosure in the cited reference cannot be relied upon to give support** for the feature concerning “collimated beam is not a spectral beam of which wavelength components are spatially separated” of the **instant application**. **The applicant still fails to point out where in the specification of the instant application that a positive support for the phrase is given. The new matters rejections therefore are still remained.** The applicant is further respectfully noted that the collimated beam that is **intended** to be used with the variable filter is **NOT** part of the variable filter and therefore contributes no specific structure specifics for the variable filter. It is rather an issue of intended use. Also since Figures 2 and 7 of the instant application specifically discloses the wavelength characteristics of the variable filter this means that the collimated light has to have more than one wavelength components (or being a spectral beam) for otherwise that it would be impossible to have this resultant wavelength characteristics. One skilled in the art also understand that the collimated lens which uses ordinary lens material has refractive index that is a function of wavelength this means that wavelength components will be refracted *differently* according to the different refractive index value for the specific wavelength, this will result *spatial separation* of the wavelength components of the collimated beam, (this is called dispersion). **The instant application therefore cannot support the feature “collimated beam is not a spectral beam of which wavelength components are spatially separated”.**

10. Applicant’s arguments concerning the cited Fukushima reference must be operated with a “spectral beam” otherwise it cannot be operable, the examiner respectfully disagrees for the reasons stated below. Although Fukushima discloses the optical filter is **used** to filter a spectral beam, it does not mean it cannot be operated with non-spectral beam. Furthermore, the instant application discloses the optical filter has “wavelength characteristics” which will only occur if the incident collimated beam comes with many wavelength components otherwise no wavelength characteristics (i.e. the wavelength characteristics

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as shown in Figures 2 and 7) will result. This means the optical filter of the instant application cannot be operated with a non-spectral beam.

11. Applicant's arguments concerning the incident light of cited Luo reference does not hit the space between the filter portion, which therefore differs from the instant application, the examiner respectfully disagrees since the claims never positively claims that the light hit the space between the filter portion. Furthermore, there will always be light escapes through the space between the filter portions.

### *Conclusion*

12. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

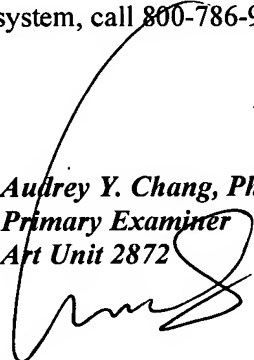
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Audrey Y. Chang whose telephone number is 571-272-2309. The examiner can normally be reached on Monday-Friday (8:00-4:30), alternative Mondays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Drew Dunn can be reached on 571-272-2312. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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*Audrey Y. Chang, Ph.D.*  
*Primary Examiner*  
*Art Unit 2872*



A. Chang, Ph.D.